

## Colorectal Cancer Screening in Greenland - An Economic Model

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**Background:** Colorectal Cancer (CRC) is one of the top three causes of cancer death worldwide. Despite its wide effects, it is an entirely preventable cancer with effective screening measures. One population that is disproportionately affected is Alaska Natives (ANs). Since 2001, Alaska has implemented a successful screening program to increase CRC screening (CRCS) among its AN population. Greenland is a nation with similar environmental, cultural, and demographic characteristics to Alaska, and its population is also at high risk of CRC. An economic model was produced by students from Dartmouth Tuck School of Business to assess the cost of implementing a colonoscopy based CRCS program in Greenland, similar to that of Alaska.

**Methods:** Five key overall assumptions were used for the economic model, which include the following: the eligible population, acceptance and success of screening, time frame and phasing of screening, four primary cost modules, and methodology for cost simulation. The model assessed the cost under two screened populations: 50-69 year olds or 40-69 year olds. Similarly the model evaluated two screening scenarios: the Nuuk Scenario where all patients travel to the capital of Greenland, Nuuk, for screening, or the Regional Scenario, where patients and health providers travel to five regional hospitals for screening.

**Findings:** The most inexpensive screening model is screening 50-69 year olds in the Regional Scenario (~400,000,000 DKK/~59 million USD over 11 years). The most expensive screening model is screening 40-69 year olds in the Nuuk Scenario (948,000,000 DKK/~140,000,000 over 11 years).

**Interpretation:** This model is too expensive for the current national health budget in Greenland. The four scenarios would each require between 4-8% of the entire national health care budget over 11 years of implementation. This is too large a percentage given the already existing barriers to primary health care in Greenland. CRCS remains an important public health consideration in Greenland, particularly for vulnerable subpopulations. Therefore, a more cost effective, though lower sensitivity, CRC screening alternative to colonoscopy may be considered for this unique Arctic population.

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## New Roads and Orthopedic Trauma in Rural Haiti

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**Background:** Road traffic injuries (RTIs) have been labeled the "hidden epidemic" in low and middle-income countries (LMICs) where road safety, injury prevention programs, and investments in trauma centers have failed to keep up with increasing vehicle ownership and transit infrastructure development. Haiti has recently constructed a major transport corridor, RN#3, linking two of the island's largest cities, Port-au-Prince and Cap Haitien. The goal of this study was to evaluate the rise and response to RTIs by Haitian trauma centers.

**Methods:** Surgical records were collected from Partners In Health's (PIH) facilities in Haiti's Central Plateau before (time period 1: 2008-2009) and after (time period 2: 2014-2015) the construction of RN#3. Between these two time periods, PIH also built a 300-bed hospital, University Hospital of Mirebalais (UHM), in the same catchment area, and centralized provision of surgical services at this new hospital. Surgical data was collected from the operating room case logs. Fracture incidence was defined as injuries involving a joint or bone, excluding isolated soft tissue injury and repair. This study controls for the impact of increasing surgical capacity by comparing changes in orthopedic volume to changes in obstetric volume between time periods.

**Findings:** Total surgical volume increased from 1,188 cases in the first time period to 2,134 cases in the second time period. The most dramatic increase was in orthopedics, where the number of fracture reductions increased from 21 to 224 (10-fold increase), while there was only a 3-fold increase in the number of obstetric cases. Between the two time periods, there was an increase in the proportion of operative fracture reductions using internal fixation with hardware versus external fixation, from 7/18 (39%) to 105/156 (67%). UHM also performed a greater volume of elective orthopedic cases in the second time period.

**Interpretation:** The precipitous rise in orthopedic trauma is more than can be explained by increased access to care alone, and represents new burden of disease from RTIs occurring on newly constructed roads. Transportation infrastructure is critical for economic development, but this study highlights the need for parallel investments in trauma centers, specifically orthopedic centers and orthopedic hardware, as well as proactive measures to prevent these devastating injuries.

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## Addressing Mental Health Needs of Remote Staff: Developing Strategies to Provide Ongoing Support for Long-Term Employees Based in Resource-Limited Areas

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